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ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			DIAMOND, ALAN D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/041,597	<b>Applicant(s)</b> YAMAKAWA ET AL.	
	<b>Examiner</b> Alan Diamond	<b>Art Unit</b> 1753	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-18 and 20-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 1, 2005 has been entered.

### ***Comments***

2. In view of Applicant's arguments filed 11/01/2005, the Examiner expressly withdraws the 35 USC 112, first paragraph, rejections for new matter with respect to the term "at least one access opening". The Examiner agrees with applicant a skilled artisan would have recognized that a sample and/or solution could have been delivered to Applicant's channels in many ways other than solution reservoirs, such as via hoses; a skilled artisan would immediately recognize that each one of Applicant's reservoirs is an "opening" formed in the planar plate, which opening provides access to applicant's channels; and that plural reservoirs do not always have to be used.

3. The Examiner agrees with Applicant that the limitation in claims 23 and 26 that that fluorescent transmission path is bounded by an air gap on at least two sides thereof within the planar plate is supported by pages 8, lines 14-16, of the instant specification.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 21, 22, 24, and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 21, the limitation that the second flat and smooth incoming window for introducing the excitation beam into the planar plate and the at least one access opening are "normally accessible from mutually differing sides of the planar plate" is not supported by the specification as originally filed. It is suggested that the word "normally" at line 5 be deleted from the claim.

In claim 22, the limitation that the "second flat and smooth outgoing window for emitting the fluorescence outside of the planar plate and the at least one access opening are "normally accessible from mutually differing sides of the planar plate" is not supported by the specification as originally filed. It is suggested that the word "normally" at line 5 be deleted from the claim.

In claim 24, the limitation that "the second incoming window for introducing the excitation beam into the planar plate and the at least one access opening are "normally accessible from mutually differing sides of the planar plate" is not supported by the specification as originally filed. It is suggested that the word "normally" at line 5 be deleted from the claim.

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In claim 25, the limitation that the “second outgoing window for emitting the fluorescence outside of the planar plate and the at least one access opening” are “normally accessible from mutually differing sides of the planar plate” is not supported by the specification, as originally filed. It is suggested that the word “normally” at line 5 be deleted from the claim.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 21, 22, 24, and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At line 5 in each of claims 21, 22, 24, and 25, the term “normally accessible” is indefinite because it is subjective. It is not clear how close to being accessible the at least one access opening and recited window must be in order to be considered “normally accessible”.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-8, 12-17, and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-288090 (herein referred to as JP '090) in view of JP 11-352102 (herein referred to as JP '102) and Simpson et al (U.S. Patent 6,485,625).

JP '090 teaches an electrophoresis apparatus comprising a planar plate (14,15) having capillary channels (20-21) formed therein for electrophoretic separation, a light irradiating means (3) for irradiating an excitation beam into a detection part in channel (20), and a fluorescent detecting means (35) for detecting a degree of fluorescence which is generated by a sample by the excitation beam (see the attached English abstract; Figure 1; and paragraphs 0005 to 0007). As seen in Figure 1, the channels (20, 21) have what appear to be a rectangular cross-section. With respect to claim 1, the end of channel (22) which is closest to channel (20) corresponds to the instant second flat and smooth incoming window formed in a surface of the planar plate. With respect to claim 2, the end of channel (22) which is closest to channel (20) encompasses the instant second incoming window formed in a surface of the planar plate. Alternatively, with respect to claim 2, the end of the channel (22) at the edge of the plate (14) reads on the instant second incoming window formed in a surface of the planar plate. With respect to claims 1 and 2, the portion of the side-wall of channel (20) that is near the end of the channel (22) corresponds to the instant first flat and smooth incoming window. Note that there is clearly an excitation transmission path between said side-wall of channel (20) and either said end of the channel (22) which is closest to the channel (20) or said end of the channel (22) at the edge of the plate (14). With respect to claims 1 and 2, when (14) and (15) are secured together (paragraph 0007), the lower surface of (15) is directly above channel (20) and below the detector (35), and encompasses the instant first flat and smooth outgoing window. Furthermore, with respect to claims 1 and 2, when (14) and (15) are secured together (paragraph 0007),

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the upper surface of (15) opposite said lower surface of (15) and below the detector (35), encompasses the instant second flat and smooth outgoing window. Clearly, there is a fluorescent transmission path through (15), and thus, (15) is transparent, as per instant claims 3 and 12. The channel (22) and the slit (36) encompass the "at least one optical component" that is recited in claims 1 and 2. The channel (22) and the slit (36) are the same as here claimed, whether they are formed during molding of the planar plate or machined into the planar plate after the molding.

With respect to claims 4 and 13, JP '090's optical fiber (8) encompasses the instant light converging means (see paragraph 0007).

With respect to claims 5 and 14, JP '090's slit (36) encompasses the instant light splitting means (see paragraph 0008).

With respect to claims 6 and 15, JP '090's light filter (37) encompasses the instant spatial filter (see paragraph 0008).

With respect to claims 7, 8, 16, and 17 it is the Examiner's position that JP '090's plate (14,15) is essentially the same as that produced by the claimed product-by process.

With respect to claims 23 and 26, the slit (26), through which fluorescent light will be detected, will most certainly have some air since the apparatus is not in a vacuum.

JP '090 teaches the limitations of the instant claims other than the differences which are discussed below.

Looking at JP '090's Figure 1, the light enters through the side of the plate (14,15) and the fluorescence exits from the top of plate (14,15). However, according to claim 1,

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it would appear that light enters from the bottom, and the fluorescence exits from a side. However, "side", "top" and "bottom" are relative terms. When JP '090's case (1) in Figure 2 is turned on its side such that the light source (3) in Figure 1 is vertical (and facing up) rather than horizontal, then light enters from the bottom, and the fluorescence exits from a side. Alternatively, since the terms "side", "top" and "bottom" are relative, if one is looking at Figure 1 from the side, then the location of irradiating means (3) could be considered the bottom, and thus, the detector (35) would be on a side. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have turned JP '090's case (1) on its side to that the electrophoresis could be performed in a tight location requiring the case (1) to be turned in its side. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have looked at JP '090's apparatus from the side, and thus, consider the location of irradiating means (3) to be the bottom and the location of the detector (35) to be on a side wall because a skilled artisan can look at JP '090's apparatus any way he/she pleases.

According to claim 2, it would appear that light enters from the side, and the fluorescence exits from the bottom. However, as noted above "side", "top" and "bottom" are relative terms. When JP '090's case (1) in Figure 2 is turned upside down, the light still enters from the side, and then, the fluorescence exits from the bottom. Alternatively, since the terms "side", "top" and "bottom" are relative, if one is upside down and looking at Figure 1, then the location of irradiating means (3) would still be considered the side, but, the detector (35) would be at the bottom. It would have been



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obvious to one of ordinary skill in the art at the time the invention was made to have turned JP '090's case (1) upside down so that the electrophoresis could be performed in a location requiring the case to be upside down. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have been upside down while looking at JP '090's apparatus because a skilled artisan can look at JP '090's apparatus any way he/she pleases.

While it appears that JP '090's channels (20, 21) have a rectangular cross-section, and thus, have bottom and top surfaces (note that plate (15) will provide a surface for said channels) and left and right side wall surfaces, JP '090 does not specifically require the instant cross-sectional shape, and thus, the use of flat walls. However, the use of rectangular channels (grooves) for capillary electrophoresis is well known in the art, as shown by JP '102 (see paragraphs 0001 and 0006; and Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used rectangular grooves for JP '090's channels (20, 21) because the use of rectangular channels (grooves) for capillary electrophoresis is well known in the art, as shown by JP '102, and because JP '090's channels (20, 21) appear to be rectangular in cross-section.

With respect to claim 1, JP '090 does not require that walls of its grooves (20, 21) be smooth. As noted above, the end of channel (22) which is closest to channel (20) corresponds to the instant second flat and smooth incoming window formed in a surface of the planar plate. The portion of the side-wall of channel (20) that is near the end of the channel (22) corresponds to the instant first flat and smooth incoming window.

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When (14) and (15) are secured together (paragraph 0007), the lower surface of (15) is directly above channel (20) and below the detector (35), and encompasses the instant first flat and smooth outgoing window. Furthermore, when (14) and (15) are secured together (paragraph 0007), the upper surface of (15) opposite said lower surface of (15) and below the detector (35), encompasses the instant second flat and smooth outgoing window. Simpson et al is relied upon for teaching what is very well known in the art, i.e., that electrophoresis separation channels should be smooth for the separation of biopolymer fragments because surface roughness can lead to abnormal mobility (see col. 23, lines 16-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared JP '099's channels such that they have smooth surfaces because it is very well known in the art that electrophoresis separation channels should be smooth for the separation of biopolymer fragments because surface roughness can lead to abnormal mobility, as taught by Simpson et al.

With respect to claims 21, 22, 24, and 25, JP '090 does not specifically teach at least one access opening for communication of fluid in its channel, as here claimed. However, the use of such access openings is conventional in the art, as shown by JP '102 (see the entire document, in particular Figures 1 and 2). With access openings as shown in JP '102's Figure 1, the second flat and smooth incoming and the second flat and smooth outgoing window of JP '090 will be accessible from mutually differing sides of the planar plate, as here claimed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided JP '090's electrophoresis apparatus with at least one access opening for communication of fluid in JP '090's

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channel because the use of such an access opening is conventional in the art, as shown by JP '102.

10. Claims 9, 11, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '090 in view of JP '102 as applied to claims 1-8, 12-17, and 21-26 above, and further in view of Li (WO 00/06996).

JP '090 in view of JP '102 and Simpson et al, as relied upon for the reasons recited above, teaches the limitations of instant claims 9 and 18, the difference being that JP '090 does not specifically teach that its plate (14,15) can be made from a thermosetting resin. Li is relied upon for showing that such a plate for electrophoresis can be made from polymers, such as polydimethylsiloxane, which is thermosetting (see page 17, lines 7-14; and Figures 3A and 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared the plate (14,15) in JP '090's electrophoresis apparatus from a thermosetting polymer such as polydimethylsiloxane because polydimethylsiloxane is a known material for preparing such a plate, as taught by Li.

JP '090 in view of JP '102 and Simpson et al, as relied upon for the reasons recited above, teaches the limitations of instant claims 11 and 20, the difference being that JP '090 does not specifically teach plural of its channel (20) so that the light from the irradiating means (3) can pass through the plural channels at the same time. However, the use of multiple parallel channels, wherein the light from a source is irradiated on the channels at the same time is known in the art, as seen in Figures 1A, 3A, and 4-6 of Li. The use of multiple parallel channels provides the advantage that

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multiple samples can be analyzed at once (see also page 11 of Li, which describes said Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used plural of JP '090's channel (20) in the plate (14,15) so that the light from the irradiating means (3) can pass through the plural channels at the same time, and thus, multiple samples can be analyzed at once, as shown by Li.

11. Claims 2, 12-17, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-288090 (herein referred to as JP '090) in view of JP 11-352102 (herein referred to as JP '102).

JP '090 teaches an electrophoresis apparatus comprising a planar plate (14,15) having capillary channels (20-21) formed therein for electrophoretic separation, a light irradiating means (3) for irradiating an excitation beam into a detection part in channel (20), and a fluorescent detecting means (35) for detecting a degree of fluorescence which is generated by a sample by the excitation beam (see the attached English abstract; Figure 1; and paragraphs 0005 to 0007). As seen in Figure 1, the channels (20,21) have what appear to be a rectangular cross-section. The end of channel (22) which is closest to channel (20) encompasses the instant second incoming window formed in a surface of the planar plate. Alternatively, the end of the channel (22) at the edge of the plate (14) reads on the instant second incoming window formed in a surface of the planar plate. The portion of the side-wall of channel (20) that is near the end of the channel (22) reads on the instant first flat and smooth incoming window. Note that there is clearly an excitation transmission path between said side-wall of channel (20) and either said end of the channel (22) which is closest to the channel (20) or said end

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of the channel (22) at the edge of the plate (14). When (14) and (15) are secured together (paragraph 0007), the lower surface of (15) is directly above channel (20) and below the detector (35), and encompasses the instant first flat and smooth outgoing window. Furthermore, when (14) and (15) are secured together (paragraph 0007), the upper surface of (15) opposite said lower surface of (15) and below the detector (35), encompasses the instant second flat and smooth outgoing window. Clearly, there is a fluorescent transmission path through (15), and thus, (15) is transparent, as per instant claim 12. The channel (22) and the slit (36) encompass the "at least one optical component" that is recited in claim 2. The channel (22) and the slit (36) are the same as here claimed, whether they are formed during molding of the planar plate or machined into the planar plate after the molding.

With respect to claim 13, JP '090's optical fiber (8) encompasses the instant light converging means (see paragraph 0007).

With respect to claim 14, JP '090's slit (36) encompasses the instant light splitting means (see paragraph 0008).

With respect to claim 15, JP '090's light filter (37) encompasses the instant spatial filter (see paragraph 0008).

With respect to claims 16 and 17, it is the Examiner's position that JP '090's plate (14,15) is essentially the same as that produced by the claimed product-by process.

With respect to claim 26, the slit (26), through which fluorescent light will be detected, will most certainly have some air since the apparatus is not in a vacuum.

JP '090 teaches the limitations of the instant claims other than the differences which are discussed below.

According to claim 2, it would appear that light enters from the side, and the fluorescence exits from the bottom. However, as noted above "side", "top" and "bottom" are relative terms. When JP '090's case (1) in Figure 2 is turned upside down, the light still enters from the side, and then, the fluorescence exits from the bottom.

Alternatively, since the terms "side", "top" and "bottom" are relative, if one is upside down and looking at Figure 1, then the location of irradiating means (3) would still be considered the side, but, the detector (35) would be at the bottom. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have turned JP '090's case (1) upside down so that the electrophoresis could be performed in a location requiring the case to be upside down. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have been upside down while looking at JP '090's apparatus because a skilled artisan can look at JP '090's apparatus any way he/she pleases.

While it appears that JP '090's channels (20, 21) have a rectangular cross-section, and thus, have bottom and top surfaces (note that plate (15) will provide a surface for said channels) and left and right side wall surfaces, JP '090 does not specifically require the instant cross-sectional shape. However, the use of rectangular channels (grooves) for capillary electrophoresis is well known in the art, as shown by JP '102 (see paragraphs 0001 and 0006; and Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used rectangular

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grooves for JP '090's channels (20, 21) because the use of rectangular channels (grooves) for capillary electrophoresis is well known in the art, as shown by JP '102, and because JP '090's channels (20, 21) even appear to be rectangular in cross section.

With respect to claims 24, and 25, JP '090 does not specifically teach at least one access opening for communication of fluid in its channel, as here claimed.

However, the use of such access openings is conventional in the art, as shown by JP '102 (see the entire document, in particular Figures 1 and 2). With access openings as shown in JP '102's Figure 1, the second flat and smooth incoming and the second flat and smooth outgoing window of JP '090 will be accessible from mutually differing sides of the planar plate, as here claimed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided JP '090's electrophoresis apparatus with at least one access opening for communication of fluid in JP '090's channel because the use of such an access opening is conventional in the art, as shown by JP '102.

12. Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '090 in view of JP '102 as applied to claims 2, 12-17, and 24-26 above, and further in view of Li (WO 00/06996).

JP '090 in view of JP '102, as relied upon for the reasons recited above, teaches the limitations of instant claim 18, the difference being that JP '090 does not specifically teach that its plate (14,15) can be made from a thermosetting resin. Li is relied upon for showing that such a plate for electrophoresis can be made from polymers, such as polydimethylsiloxane, which is thermosetting (see page 17, lines 7-14; and Figures 3A

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and 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared the plate (14,15) in JP '090's electrophoresis apparatus from a thermosetting polymer such as polydimethylsiloxane because polydimethylsiloxane is a known material for preparing such a plate, as taught by Li.

JP '090 in view of JP '102, as relied upon for the reasons recited above, teaches the limitations of instant claim 20, the difference being that JP '090 does not specifically teach plural of its channel (20) so that the light from the irradiating means (3) can pass through the plural channels at the same time. However, the use of multiple parallel channels, wherein the light from a source is irradiated on the channels at the same time is known in the art, as seen in Figures 1A, 3A, and 4-6 of Li. The use of multiple parallel channels provides the advantage that multiple samples can be analyzed at once (see also page 11 of Li, which describes said Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used plural of JP '090's channel (20) in the plate (14,15) so that the light from the irradiating means (3) can pass through the plural channels at the same time, and thus, multiple samples can be analyzed at once, as shown by Li.

### ***Response to Arguments***

13. Applicant's arguments filed November 1, 2005 have been fully considered but they are not persuasive.

Applicant argues that neither JP '090 nor Li et al discloses a planar plate having at least one optical component integrally molded therein. However, this argument is not deemed to be persuasive because the channel (22) and the slit (36) in JP '090's planar



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plate (14) encompass the “at least one optical component” that is recited in claims 1 and 2. The channel (22) and the slit (36) are the same as here claimed, whether they are formed during molding of the planar plate or machined into the planar plate after the molding.

Applicant argues that at best JP '090 teaches that the grooves (20-22) are “formed” in the surface of the substrate, and that “formed” is vague in this it provides no detailed teaching as to exactly how the grooves are formed. However, this argument is not deemed to be persuasive because the instant claims are not method claims, they are product claims. JP '090's channel (22) and the slit (36) are the same as here claimed, whether they are formed during molding of the planar plate or machined into the planar plate after the molding.

Applicant argues that the Examiner's statement: “as seen in Figure 1, channels (20, 21) have what appear to be rectangular cross-section”, is pure and improper speculation. However, this argument is not deemed to be persuasive because, although schematic, JP '090's Figure 1 appears to show a rectangular cross-section. In any event, as noted above, the use of rectangular channels (grooves) for capillary electrophoresis is well known in the art, as shown by JP '102 (see paragraphs 0001 and 0006; and Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used rectangular grooves for JP '090's channels (20, 21) because the use of rectangular channels (grooves) for capillary electrophoresis is well known in the art, as shown by JP '102, and because JP '090's channels (20, 21) even appear to be rectangular in cross-section.

Applicant argues that JP '090 nowhere describes the shapes and/or flatness of its groove regions. However, this argument is not deemed to be persuasive because if a skilled artisan is preparing rectangular channels, it would have been obvious to use flat walls for the grooves. With respect to smoothness, as noted above, Simpson et al is relied upon for teaching what is very well known in the art, i.e., that electrophoresis separation channels should be smooth for the separation of biopolymer fragments because surface roughness can lead to abnormal mobility (see col. 23, lines 16-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared JP '099's channels such that they have smooth surfaces because it is very well known in the art that electrophoresis separation channels should be smooth for the separation of biopolymer fragments because surface roughness can lead to abnormal mobility, as taught by Simpson et al.

Applicant argues that the Examiner's statement: "The channel (22) and the slit (36) are the same as here claimed, whether the are formed during molding of the planar plate or machined into the planar plate molding", represents unsubstantiated opinion. Applicant cites In re Lee for the proposition that "deficiencies in the cited references cannot be remedied with conclusions about what is 'basic knowledge' or 'common knowledge'". However, this argument is not deemed to be persuasive the "integrally molded therein" recited at the last line in each of instant claim 1 and 2 represents a product-by-process limitation. JP '090's channel (22) and slit (36) are optical components and encompass the instant "at least one optical component". There is nothing in instant claims 1 and 2 that physically distinguishes between the instant

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generic "optical component" and channel (22) and slit (36). JP '090's channel (22) is integral to the plate (14) whether it is formed by etching or molding or some other means. Indeed, Simpson et al prepares smooth grooves by etching (see the paragraph bridging cols. 22 and 23). As an alternative, Simpson et al teaches molding can be used (see col. 24, lines 13-16 and 51-59).

Applicant argues that "[w]ith respect to the present 'molding' vs 'machining' allegations, Applicant's specification specifically describes that molding advantageously results in parts (e.g., channels, windows) having high accuracy (e.g., fidelity), smoothness, etc." and that "[i]n contrast any machining will be significantly less accurate (due to varying machining tolerances) and much less smooth." However, this argument is not deemed to be persuasive because nothing unexpected has been demonstrated with respect to JP '090 or with respect to smoothness or accuracy. The preparation of smooth electrophoresis separation channels is well known in the art, as shown by Simpson et al. Furthermore, Simpson et al teaches various different methods, such as molding, for forming grooves (see col. 24, line 13 through col. 25, line 62), and the use of any of these methods would have been within the skill of an for preparing JP '090's grooves.

Applicant arguments further include remarks from Applicant's foreign representatives, as set forth on page 19, second to last paragraph, to page 20, line 2, of the Remarks filed November 1, 2005. The Examiner has considered said remarks from the foreign representative and does not deem them to be persuasive because there is

nothing in said remarks that distinguishes the claimed invention from the prior art relied upon by the Examiner.

***Allowable Subject Matter***

14. Claims 10 and 19 are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: Claims 10 and 19 are allowable because if there were multiple of JP '090's plates (14,15) in the apparatus, then there would at least have to be multiple of the irradiating means (3), i.e., one irradiating means (3) for each plate. Claims 10 and 19 require a plurality of the instant planar plates, such that a single excitation beam from the light irradiating means can be led through the channels in the planar plates layered one upon another.

***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP 2001-83118 A is hereby made of record.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Alan Diamond  
Primary Examiner  
Art Unit 1753

Alan Diamond  
February 7, 2006

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.